Clean Version of CIP Claims

What I claim:

34. A mini plasma display, comprising in combination:

(a) semiconductor substrate,

(b) gas containment cavity array formed in said semiconductor substrate,

(c) ionization slots each cavity in row direction wherein said ionization slots allow sustained glow discharge at activated gas cavity extending ionization to immediately preceding and immediately succeeding cavities in the row therein,

(d) columnar electrodes interconnecting gas cavities in groups,

(e) row electrodes orthogonal to columnar electrodes interconnecting gas cavities in groups,

(f) hermetic sealing and gas filling means,

(g) pulsed electronic circuit enabling means providing electrical activation of selected column and selected row electrodes wherein luminous glow discharge is established in gas containment cavity at crossover of said electrodes for start of frame period of video raster scan wherein electrical activation of said luminous glow discharge is triggered in timed relation to standard television broadcast signals,

(h) pulsed electronic circuit enabling means providing electrical activation of selected column electrode groups and selected row electrode groups imparting sequential bistable transfer of an established luminous glow discharge along a row triggered in timed relation to standard television broadcast signals,

(i) pulsed electronic circuit enabling means providing electrical activation of selected column electrode groups and selected row electrode groups providing synchronized electrical activation of frame initiation and luminous glow discharge scan transfer along a row triggered in timed relation to standard television broadcast signals,

wherein the improvement is a method for eliminating orthogonal X-Y addressing as well as improved structure for the construction of a mini display panel of the plasma type.

35. A mini plasma display of claim 34 containing additionally a transparent faceplate sealed to said semiconductor substrate,

wherein the improvement is improved viewing of luminous glow discharge on transparent faceplate side unobstructed by operational electrodes plus increased structural strength of gas containment cavities sealed in full peripheral extant allowing increased gas pressure and thus increased lumens in a plasma display of the mini type.

36. A mini plasma display panel of claim 34 containing semiconductor substrate consisting of at least two layers differing in etch rate properties wherein cavity array pattern etched in top semiconductor layer is used as etch mask to define gas cavity array in underlying semiconductor layer thereby forming cavities thereunder contingent to and self-aligned with top layer cavities.

wherein the improvement is a method for achieving concentric gas cavity structures.

37. A mini plasma display of claims 34 and 36 containing semiconductor substrate consisting of at least two layers differing in etch rate properties whereby the respective etch rates each layer control the dimensional size and therefore volume of gas cavity so formed in respective layers,

wherein the improvement is a method for achieving hollow cathode structures for enhanced glow discharge luminosity.

38. A mini plasma display of claims 34 and 36 containing semiconductor substrate consisting of at least two layers differing in etch rate properties whereby the etch rate of top layer after formation of gas cavity array is low compared to higher etch rate of underlying layer whereby the dimensional size and therefore volume of underlayer gas cavities so formed may be made larger than top layer cavities.

wherein the improvement is a method for achieving hollow cathode structures for enhanced glow discharge luminosity.

39. A mini plasma display of claims 34 and 36 containing semiconductor substrate consisting of at least two layers differing in etch rate properties whereby the etch rate of top layer

after formation of gas cavity array is high compared to lower etch rate of underlying layer wherein the dimensional size and therefore volume of underlayer gas cavities so formed may be made smaller than top layer cavities.

wherein the improvement is a method for achieving hollow cathode structures for enhanced glow discharge luminosity.

40. A mini plasma display panel of claims 34 and 36 wherein cavities formed in first layer are bottomed by second semiconductor layer of very low etch rate on transparent viewing side wherein said semiconductor layer or portion thereof on transparent faceplate side is left intact as opaque to visible light,

thereby providing desirable flat-bottomed gas cavities of precise dimensions for an improved IR display.

41. A mini plasma display of claim 34 wherein said semiconductor substrate is silicon of selected crystal orientation.

42. A mini plasma display of claim 34 wherein said semiconductor substrate is silicon of <100> crystal orientation.

43. A mini plasma display of claim 35 wherein said semiconductor substrate is anodically bonded to said transparent viewing faceplate.

44. The mini plasma display panel of claim 40 wherein top semiconductor layer of selected crystal orientation is doped P-type and bottom semiconductor layer of selected crystal orientation is doped N-type providing hollow cavities by chemical etching of enhanced dimensional extent on transparent viewing plate side to allow hollow cathode structures of increased lumens.

45. The mini plasma display panel of claim 40 wherein top semiconductor layer of selected crystal orientation is doped N-type and bottom semiconductor layer of selected crystal orientation is doped P-type providing hollow cavities by chemical etching of reduced

dimensional extent on transparent viewing plate side to allow hollow cathode structures of increased lumens.

46. The mini plasma display of claims 34, 35, and 36 further including at each pixel element transparent electrodes for activation of selected color phosphors whereby signal activation in scanned synchronism with luminous gaseous discharge of phosphors at selected pixel elements provides light and color values in correspondence with supplied television signal means,

thereby providing color rendition of television with increased lumens by hollow cathode design plus increased gas pressure with viewing unobstructed by control electrodes by a method of low cost construction and wherein the scanned gas discharge light pixels of increased lumens may be used as a robust, small-sized, thin, high pixel density, high resolution television display.

47. The mini plasma display of claims 34, 35, and 36 cooperatively providing a scanning lighting source of recurring raster pattern for a LCD display.